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Agriculture.

Fifty-second annual report. By C. E. Ladd. Ithaca, N.Y. New York State college of agriculture. Cornell university agricultural experiment station, 1939. 203p.

Fifty-second annual report, 1938-39, Colorado experiment station. Fort Collins, Colo., Colorado state college, 1939. 63p.

Fifty-second annual report of the Kentucky agricultural experiment station, for the year 1939. Part II. Lexington, Ky., 1939. 393p.

Grassland farming. By Harry E. Besley. Agricultural engineering. v.20,no.12. December, 1939. p.459-461..

Research in agriculture; work of the Agricultural experiment station during the year ending June 30, 1937. By F. B. Mumford and S. B. Shirky. Columbia, Mo., 1940. 120p. University of Missouri. Agricultural experiment station. Bulletin no.413.

South's changing agriculture. By Paul W. Chapman. American fertilizer. v.92,no.1. January 6, 1940. p.9-11.

Air Conditioning.

Air-conditioned dairy barns. By A. M. Goodman. Successful farming. v.38,no.3. March, 1940. p.22,54-55.

Psychrometric chart: its application and theory. By William Goodman. Heating, piping and air conditioning. v.12,no.1. January, 1940. p.6-9.

Trend in air conditioning. By William B. Henderson. Water works engineering. v.93,no.3. January 31, 1940. p.119-122. Study of number and types of installations made in this country--evaporative condensers cut water demands.

Architecture.

In search of a living architecture. By Albert Frey. New York, Architectural book publishing company, inc., c1939. 95p.

Barns.

Trends in one-story barn construction. By J. F. Schaffhausen. Agricultural engineering. v.20,no.12. December, 1939. p.467-468. Tentative requirements as basis of study: 1. Fireproof exterior. 2. Fireproof or fire-resistant interior. 3. Freedom from vermin. 4. Adequate dependable ventilation. 5. Proper insulation. 6. Sanitary walls and ceilings that could be easily cleaned. 7. Motion study to eliminate extra labor. 8. Desirable type of construction. 9. Lowest possible maintenance requirements. 10. Cost per head not to exceed $100. 11. Unit type of construction. 12. Good general appearance.

Brooders, Electric.

Electric brooder. By John E. Nicholas. Pennsylvania farmer. v.122,no.1. January 13, 1940. p.32-34.

Building Materials.

Plywood and laminated timber construction. By Ira D. S. Kelly. Civil engineering. v.10,no.1. January, 1940. p.25-28. Discussion of nailed and glued laminated construction, structural plywood construction, composite timber-concrete floor slabs and T-beams, and "Lanella" roof construction.

Chemistry, Technical.

Chemist spins a new yarn. Popular mechanics magazine. v.73,no.3. March, 1940. p.382-383,114A.

Chemists.

Anselme Payen, distinguished French chemist and pioneer investigator of the chemistry of lignin. By Max Phillips. Washington academy of sciences. Journal. v.30,no.2. February 15, 1940. p.65-71.

Corrosion.

Corrosion in steam heating systems. By Leo F. Collins and Everette L. Henderson. Heating, piping and air conditioning. v.12,no.1. January, 1940. p.24-27. Eliminating deleterious gases from steams.

Corrosion of metals. By Charles E. Hartford and Raymond L. Copson. Industrial and engineering chemistry. Industrial ed. v.31,no.9. September, 1939. p.1123-1128. Serious corrosion problems are encountered in manufacture of phosphoric acid by electric furnace process. During past several years, studies of these corrosion problems have been in progress in TVA phosphate fertilizer plant at Wilson Dam. Article describes results of tests of metals exposed to corrosion by crude phosphoric acid and by crude phosphorus under actual plant conditions. It also describes how some of practical corrosion problems have been met in plant.

Cotton and Cotton Ginning.

Cleanliness and fire hazards. By Orville Adams. Cotton and cotton oil press. v.40,no.30. December 23, 1939. p.5-6. Importance of keeping gins clean and efficient.

Season's end in cotton ginning. By Chas. A. Bennett and Francis L. Gerdes. Cotton ginners' journal. v.11,no.3. December, 1939. p.5-6,15.

Cotton Machinery.

Cotton dusting machinery. By H. P. Smith. Farmers digest. v.3,no.7. November, 1939. p.75-78. Information given on types of machine, number of acres of cotton each type will handle, whether machines will handle sulphur, sulphur-calcium arsenate mixtures, and calcium arsenate equally well, whether dusting is better than spraying and average cost of machine.

Crops (Drying).

Curing hay in the barn with electricity. By C. E. Wylie. Rural electrification news. v.5,no.3. November, 1939. p.10-11. Electricity provides only power to blow air through hay after it has been stored in barn. Hay driers on individual farms. Method and equipment. Results and cost.

Facts about grass drying: editorial. Implement and machinery review. v.65,no.773. September 1, 1939. p.511.

Hop drying. By A. H. Burgess. Journal of the Ministry of agriculture. v.46,no.6. September, 1939. p.524-531.

Technical problems relating to grass drying: editorial. Implement and machinery review. v.65,no.773. September 1, 1939. p.512.

Culverts.

Simplified design of box culverts by moment distribution. By Victor W. Sauer. Civil engineering. v.9,no.12. December, 1939. p.741-742.

Drainage.

Drain the wet spots. By J. R. Hawell. State College, Penna., 1940. 34p. Pennsylvania state college. Division of agricultural extension. Circular no.112.

Electricity - Distribution.

Advances in the use of electricity. By Frederick W. Doolittle. Civil engineering. v.10,no.2. February, 1940. p.90-92. Avoiding usual cut-and-dried treatment, author holds statistical data to minimum and concentrates on interpreting their economic significance. Then, looking to future, he outlines several problems to which engineering thought should be given if further advances in use of electricity are to be assured.

How much work can a kilowatt-hour do for you? By C. M. Ripley. Rural electrification news. v.5,no.3. November, 1939. p.12-13.

36th annual statistical number. Electrical world. v.113,no.2. January 13, 1940. p.92-102.

Electricity on the Farm.

Economical uses of electricity. By Earl L. Arnold. Farm and ranch. v.58,no.10. October, 1939. p.14-15.

Energy consumption of electrically operated dairy farm equipment. By J. R. Tavernetti. Agricultural engineering. v.20,no.12. December, 1939. p.465-466. Table 1. Summary of data on energy consumption of dairy equipment.

Importance of education in rural electrification work. By S. P. Lyle. Rural electrification exchange. v.2,no.4. (new series). Fourth quarter, 1939. p.73-76.

Study of consumption, costs, and uses of electricity on New York State farms. By Wendell K. Keepper. Rural electrification exchange. v.2,no.4.(new series). Fourth quarter, 1939. p.84-85.

Utah power develops low cost rural cooker. By K. W. Browning. Electrical world. v.113,no.2. January 13, 1940. p.136. Development of extremely low-cost device for cooking potato culls which are used for hog feed has saved money for many rural customers served by Utah Power & Light Co. and has proved to be desirable way of introducing electric usage to farm. Utah cooker is made by taking 40-gal. range boiler, cutting out bottom and using this open end as top. 3/4-in. rim is left to accommodate rubber gasket, and old plow disk is used as lid. Couple of fittings are welded to tank at top to provide for hinged bar which is used to clamp on lid. Lid is equipped with safety valve. Strip heaters are wrapped around tank near bottom, providing about 3 kw. capacity. Whole is covered with insulation and mounted on trunnions, latter so it can be upended to dump batch. Customers like equipment because it is trouble-free and cheaper and safer than wood or coal. In freezing weather fact that cooker can be safely operated indoors makes for savings by forestalling loss of feed through freezing.

Engineering.

Condensed library of engineering: A minimum list of books representative of engineering and its basic sciences. Ed. by C. E. Lucke. n.p., n.d. 16p.

Graduate work in engineering. By Charles E. Ferris and Richard O. Niehoff. Mechanical engineering. v.61,no.12. December, 1939. p.900-902. Development of a part-time program at the University of Tennessee.

Professional status--a British viewpoint. By Clement D. M. Hindley. Civil engineering. v.9,no.12. December, 1939. p.719-721. Improvement of technical qualifications, rigid adherence to ethical standards, and conservative long-term policy of publicity, are activities best calculated to improve social and economic status of engineer. Although conditions controlling program and attitude of Institution of Civil Engineers differ in many respects from those in United States, engineers here may nevertheless study with profit this presentation of British viewpoint.

Requisites for engineering leadership. By A. R. Stevenson, Jr. Mechanical engineering. v.61,no.12. December, 1939. p.903-906.

Social responsibility of the engineer. By Robert E. Doherty. Mechanical engineering. v.61,no.9. September, 1939. p.653-656.

Engines.

Some new investigations on old combustion-engine problems:--I. By Ing. G. Eichelberg. Engineering. v.148,no.3850. October 27, 1939. p.463-466.

Erosion.

Effect of accelerated erosion on silting in Morena reservoir, San Diego county, Calif. By F. F. Barnes and others. Washington, D. C., 1939. 22p. U.S. Department of agriculture. Technical bulletin no.639.

Rainfall characteristics as related to soil erosion. By D. I. Blumenstock. Washington, D.C., 1939. 44p. U.S. Department of agriculture. Technical bulletin no.698.

Fans.

New developments in dryer fans. By T. A. Wood. Rural electrification exchange. v.2,no.4.(new series). Fourth quarter, 1939. p.81-83.

Farm Buildings.

More flexible farm buildings. By Harold E. Pinches. Agricultural engineering. v.20,no.12. December, 1939. p.463-464. It seems that less specialization should permit better building. Multiplicity of possible uses should allow depreciation, in economic sense, over longer period of years, and thus justify quality of structure in which physical depreciation would be very slow. Good buildings could well be permanent buildings, if they were so designed as not to become obsolete through shifts in farm or regional enterprises. Alternative is cheap buildings with shorter life, which can be abandoned when change is desirable and which will not retard making of changes. Future designing of farm buildings should proceed on basis that it is no longer true "that once dairy farm, always dairy farm," or that western and southern farms will continue indefinitely as strictly cash crop farms.

Practical corn cribs that would safely store your crop. American lumberman. 66th year,no.3158. August 12, 1939. p.30-31. Illustrations.

Farm Machinery and Equipment.

Ancient implements. Implement and machinery review. v.65,no.773. September 1, 1939. p.514.

Looking down machinery row at the New Jersey farm show. New Jersey farm and garden. v.11,no.1. January, 1940. p.9-10,33.

Mower with rotating disks cuts all field growths. Popular mechanics magazine. v.73,no.2. February, 1940. p.192. All types of field growth, except trees more than inch in diameter, can be cut with mowing machine that uses three rotating disks. These disks are mounted beneath machine, and their edges are studded with replaceable triangular cutters that revolve at 4,000 feet per minute when mowing speed is twenty miles an hour. At this speed fifteen acres can be cut over in hour. Standard machine cuts swath seven feet wide, and it is adjustable to shear down to within one-quarter inch for golf courses or to leave stubble up to eight inches high. It is said to handle anything from palmetto scrub and small bushes to finest hay or grass, traveling at speeds from one mile per hour in soft soil or thick scrubland to thirty-two miles on level ground. Side delivery rake may be attached for mowing hay, clover or alfalfa.

Putting your machines in shipshape. Ohio farm bureau news. v.19,no.8. March, 1940. p.12.

Sugar-beet machinery. In Fifty-second annual report, 1938-39, Colorado experiment station. Fort Collins, Colo., Colorado state college, 1939. p.23.

Farm Machinery and Equipment. (Cont'd).

Tea harvesting machinery. Implement and machinery review. v.65,no.773. September 1, 1939. p.536. An institute for research in tea and other subtropical cultivations was founded in 1930 in Russia, and among many discoveries by this institute was one of acute necessity for designing and constructing machine to harvest tea leaves, instead of having work done in conventional form. Great many designs were suggested, and several machines, acting on various principles, were made for purpose, but, up to present, without any appreciable success. In spite of this failure, we learn, the institute continues its work in this direction, and is most solicitous for any new invention which may come along.

Windrow harvesting. By George Innes. Northwest farm equipment journal. v.53,no.12. December, 1939. p.37-38.

Farmhouses.

Better homes in rural Arkansas. By Connie J. Bonslagel. Nation's agriculture. v.15,no.2. February, 1940. p.7,13.

Fertilizer Placement.

Fertilizer placement is important. California cultivator. v.86,no.26. December 30, 1939. p.701.

Fertilizers.

American fertilizer practices (second survey): a report relating to the use of commercial plant food presenting information obtained by a survey among 32,000 farmers in 35 states. By H. R. Smalley and others. Washington, D.C., National fertilizer association, 1939. 128p.

Tobacco fertilizers. By P. J. Anderson. New England homestead. v.113,no.3. February 10, 1940. p.10-11.

Fire Protection.

How to give dust death and destruction a setback. By David J. Price and Byron J. Culp. American miller. v.68,no.1. January, 1940. p.70-72,219. Seven counter offensives are suggested: 1. Dust collection and removal. 2. Removal of foreign material from grain. 3. Use of inert gas for protection in grinding and pulverizing operations. 4. Protection of electrical appliances and equipment. 5. Control of static electricity. 6. Closed storage bins. 7. Explosion venting areas in grain-handling and milling plants.

If you're no smarter than your neighbor. By Hugh Curtis. Successful farming. v.38,no.3. March, 1940. p.11,50-51,56. Discussion of fire hazards.

Flax.

Development of flax production as an aid to agriculture. New agriculture. v.22,no.3. December, 1939. p.10.

Flax may fit your farm. By Cecil Barger. Missouri ruralist. v.81,no.2. January 20, 1940. p.6.

Floods and Flood Control.

Flood-control progress. By V. T. Boughton. Engineering news-record. v.124,no.7. February 15, 1940. p.231-234.

Flow of Air.

Air flow in pipes. By Henry E. Hartig and Hugh B. Wilcox. Mechanical engineering. v.61,no.9. September, 1939. p.665-667. Application of sound pulses to the measurement of velocity.

Foods.

Canning meats on the farm. By J. R. Hawkins. Clemson, S.C., 1940. 15p. Clemson agricultural college. Extension service. Bulletin no.94.

Handbook of food manufacture. By F. Fiore and Saul Blumenthal. New York, Chemical publishing co. of N.Y., inc., 1938. 603p.

Forage Crops.

Forage production, its use and approximate costs in northeastern Nevada. By C. E. Fleming and C. A. Brennen. Reno, Nevada, 1939. 21p. University of Nevada. Agricultural experiment station. Bulletin no.150.

Hay quality; relation to production and feed value. By E. O. Pollock and W. H. Hosterman. Washington, D.C., 1939. 34p. U.S. Department of agriculture. Miscellaneous publication no.363.

Science and practice of conservation: grass and forage crops. By S. J. Watson. London, Fertilizer and feeding stuffs journal, 1939. 2v.

Frost Protection.

Little orchard heating in 1938 reduced citrus production costs. California citrograph. v.25,no.1. November, 1939. p.18. Table gives citrus cost of production.

Orchard heating development told. California citrograph. v.25,no.2. December, 1939. p.58-59.

Frost Protection. (Cont'd).

Orchard heating field laboratory. California citrograph. v.25,no.2. December, 1939. p.54. Demonstration held at orchard heating field research laboratory at Citrus experiment station orchard on Nov. 3. Told of work which has been carried on for past two years in development of orchard heater of smokeless type, efficient in operation, and of low cost to grower. Intention of study is not to devise new and revolutionary type of heater, but to incorporate basic principles already known into heater which could be used with equipment many growers already have.

Protection of orchards against frost. By W. R. Schoonover, F. A. Brooks, and H. B. Walker. California citrograph. v.24,no.12. October, 1939. p.428,457,459. Excerpts from Univ. of California bulletin III.

Some orchard heating fundamentals. By J. W. Dudley. California cultivator. v.86,no.25. December 16, 1939. p.669,687.

Use of blowers for frost protection. By J. C. Johnston. Calif. citrograph. v.24,no.10. August, 1939. p.354,370-371.

Fuels.

Characteristics of Diesel fuels influencing power and economy. By A. J. Blackwood and G. H. Cloud. S.A.E. journal. v.46,no.2. February, 1940. p.49-53. Of many characteristics of diesel fuels, heating value, ignition quality, and possibly fuel viscosity are only important ones affecting engine power and economy. Paper presents data obtained from extended fuel research program concerning power and fuel economy obtained when using fuels differing in their physical and chemical characteristics. Points which seem to be of greatest practical significance are summarized as follows: 1. Assuming complete combustion, fuel volatility affects pints per brake horsepower-hour only indirectly as it is related to heating value and ignition quality. 2. Most present-day engines have fixed injection timing and, on such engines, ignition quality is major factor in determining volumetric fuel economy in upper speed ranges. At lower engine speeds, heating value in terms of Btu per gal, or as estimated from API gravity, is most important consideration. 3. Fuel viscosity by itself is not important factor in power obtained on high-speed diesel engine, except in instances where worn injection equipment may make it undesirable to use low-viscosity fuel.

Symposium on the Combustion of solid fuels. Available from Gilbert Thiesse, Secretary, Division of gas and fuels, American chemical society, 6625 Woodwell st., Pittsburgh, Penna. 1939. 117p. Mimeographed.

Glass.

The glass age. By James McQueeny. Popular mechanics magazine. v.73,no.3. March, 1940. p.337-344.

Heating.

Performance of a stoker-fired warm-air furnace as affected by burning rate and feed rate. By A. P. Kratz and S. Konzo. Heating, piping and air conditioning. v.12,no.1. January, 1940. p.55-60.

Selection, installation, and performance of small anthracite stokers. By Paul A. Mulcey. Heating and ventilating. v.36,no.10. October, 1939. p.30-32. If stokers are to perform as expected they must be selected to deliver required output to heating system and must then be correctly and carefully installed. Here is statement of important points to be taken into account when small stokers for anthracite are under consideration.

Studies in the heating of small houses. By W. H. Purnell. Knoxville, Tenn., Tennessee valley authority, Department of regional planning studies. Community planning division, 1939. 55p. Mimeographed.

Hydraulics.

Henri Pitot, pioneer in practical hydraulics. By Richard Shelton Kirby. Civil engineering. v.9,no.12. December, 1939. p.738-740.

Hydraulics of surface runoff. By LeRoy K. Sherman. Civil engineering. v.10,no.3. March, 1940. p.165-166. Test of some common assumptions of applied hydrology.

Sixth annual report of special committee on hydraulic research. Civil engineering. v.10,no.3. March, 1940. p.185-187.

Insulation.

Synthetic materials as wire insulation. By Winton Patnode, E. J. Flynn and J. A. Weh. Industrial and engineering chemistry. Industrial ed. v.31,no.9. September, 1939. p.1063-1071. Summary of insulation of wire with synthetic materials is given. Requirements of magnet wire insulation are discussed in detail. Improved magnet wire insulated with polyvinyl acetal type resins is described and is compared with conventional enameled wire with aid of testing procedures that illustrate conditions under which magnet wire is used. This new wire is shown to be superior to conventional wires in many respects.

Insulation. (Cont'd).

Thermal test coefficients of aluminum insulation for buildings. By Gordon B. Wilkes, F. G. Hechler and E. R. Queer. Heating, piping and air conditioning. v.12,no.1. January, 1940. p.68-72.

Irrigation.

Development of irrigation projects in Saskatchewan. By G. N. Denike. Agricultural engineering. v.20,no.12. December, 1939. p.474-476.

How much water? By O. W. Monson. Montana farmer. v.27,no.8. December 15, 1939. p.6. Farmer is advised to study his soil and root systems of his growing crop and to adapt his irrigation practices to capacity of crop for using this water and to capacity of soil for storing it.

Irrigation investigations section. In Fifty-second annual report, 1938-39, Colorado experiment station. Fort Collins, Colorado, Colorado state college, 1939. p.37-41.

Lemon fruit growth in relation to soil moisture. By J. R. Furr and C. A. Taylor. California citrograph. v.24,no.12. October, 1939. p.435,438-439. More technical aspects of results of citrus irrigation studies in foothill areas near Pomona, Calif., are reported in U.S. department of agriculture technical bulletin no.640, entitled: "The growth of lemon fruits in relation to the moisture content of the soil." This article gives summary of some of more practical considerations developed by this research.

New England needs irrigation. By N. D. Herrick. Rural electrification exchange. v.2,no.4.(new series). Fourth quarter, 1939. p.96.

Some notes on irrigation of lemon trees in California. By L. T. Sharp. California citrograph. v.24,no.12. October, 1939. p.440,442,458.

Irrigation Canals.

Concrete linings for irrigation canals. By Clyde W. Wood. Civil engineering. v.10,no.1. January, 1940. p.29-32. Article reviews briefly history and results of work on two large projects in California, where lining programs have been in progress for number of years, and concludes with description of highly mechanized methods of lining construction employed on number of more recent jobs.

Lighting

Better farm and home lighting. By Joan Patterson, F. E. Price, and E. H. Davis. Corvallis, Oreg. 1939. 27p. "Selected References": p. 27. Oregon state college. Extension service. Extension bulletin 531.

Lubrication

Effect of pressure on viscosity in relation to lubrication. By J. W. Givens. Industrial and engineering chemistry. Industrial ed. v. 31, no. 9. September, 1939. p.1135-1138. Analysis has been made of data on temperature rises in three oils while partial bearing was being lubricated at high loadings. Using pressure coefficients of viscosity of these oils, an operating variable was calculated that accounted for observed temperature rises and that should be useful in studying lubrication. Differences in frictional characteristics of these oils that might be ascribed to oiliness could be accounted for by known properties of oils. Use of term "oiliness" to account for such differences admits ignorance of properties of liquids, and need for this term will disappear proportionately as more exact information becomes available.

Fundamental mechanical aspects of boundary lubrication. By H. Blok. S.A.E. journal. v.46, no.2. February, 1940. p.54-68. From physico-chemical side, boundary lubrication already has been investigated fairly thoroughly. However, it is a great handicap in intelligent selection of lubricants and materials that physico-chemical results cannot be exploited to full without knowing fundamental mechanical aspects; therefore, data on this missing link are discussed first. Starting from thesis that pressure and temperature in region of contact between rubbing surfaces are basic mechanical factors, it is shown that four main types of boundary lubrication should be distinguished: 1. Low-pressure and temperature boundary lubrication, briefly, mild boundary lubrication. 2. High-temperature boundary lubrication. 3. High-pressure boundary lubrication. 4. High-pressure and temperature boundary lubrication briefly, extreme boundary lubrication. Up to now Type 4 has been called "Extreme pressure lubrication" but, logically, term now proposed should be adopted, as in this region of boundary lubrication it is more extreme temperatures (for example, temperature flashes on gear teeth), than extreme pressures that are decisive. Moreover, confusion with the high-pressure boundary lubrication (Type 3) then can be avoided. Phenomena, characteristic for each of four main types of boundary lubrication are discussed. Frictional (that is, tangential) vibrations of rubbing surfaces are referred to in the Appendix.

Milk Cooling.

Cooling of milk for cheesemaking. Ottawa, Canada, 1940. 9p. Dominion of Canada. Department of agriculture. Dairy products division. Marketing service. Publication 687. Circular 158.

Milk Houses.

Milking parlor for small dairy farms. By K. B. Huff. Agricultural engineering. v.20, no.12. December, 1939. p.462,464. Floor plan of general-purpose barn remodeled into a grade B dairy plant by adding 18 ft. shed to provide space for a milk handling room and a two-cow tandem type milking parlor given.

Miscellaneous.

Design of lettering. By Egon Weiss. New York, Pencil points press, inc., 1932. 174p.

List of bulletins of the Agricultural experiment stations for the calendar years 1937 and 1938. By C. E. Pennington. Washington, D.C., 1940. U. S. Department of agriculture. Miscellaneous publication no.362.

Naught but the best. By Thaddeus Merriman. Civil engineering. v.9,no.12. December, 1939. p.701-702. One engineer's philosophy as applied to dams and current doctrines.

Rural library service. Prepared in the Bureau of agricultural economics. Washington, D.C., 1939. 28p. U. S. Department of agriculture. Farmers' bulletin no.1847.

Motor Fuels.

Tractor fuels. By A. W. Clyde. Pennsylvania farmer. v.122,no.1. January 13, 1940. p.28-29.

Motor Vehicles.

Automobile's contribution to agriculture and rural life. Southern planter. 101st year,no.2. February, 1940. p.4-5,10.

Modern trucks cut hauling costs on Jersey Farms. New Jersey farm and garden. v.11,no.1. January, 1940. p.8. Illustrations.

Motors, Electric.

A. C. motors of fractional horse-power; A manual of design, construction and maintenance. By H. H. Jones. New York, Chemical publishing co. of N.Y. inc., 1938. 189p.

Fractional horsepower electric motors. By C. G. Veinott. New York, McGraw-Hill book company, inc., 1939. 431p.

Motors, Electric. (Cont'd)

What size electric motor should I use? By J. B. Stere. Rural electrification exchange. v.2,no.4.(new series). Fourth Quarter, 1939. p.77-79,83.

Nutrition.

A partial bibliography on nutrition. Compiled by Dorothy W. Graf. Washington, U. S. Bureau of agricultural chemistry and engineering, 1940. 2p. Mimeographed.

Pools.

Pools in the garden. House and garden. Section II. Gardener's yearbook. January, 1940. p.22-23. Kinds, locations and structural methods.

Poultry Houses and Equipment.

All-season shelter. By Roy E. Jones. New England homestead. v.113,no.3. February 10, 1940. p.32-33. Connecticut type will roost and accommodate as high as 300 laying hens.

Built for year-round. By Roy E. Jones. New England homestead. v.113,no.3. February 10, 1940. p.4. This shelter meets four very definite present-day demands and at low cost.

Practical breeding house. By Wm. C. Sanctuary. New England homestead. v.113,no.3. February 10, 1940. p.5,9.

Standard 100-bird poultry house. By Allan A. McArdle. South Australia. Journal of the Dept. of agriculture. v.43,no.5. December, 1939. p.406-408.

Precooling.

Precooling tests of Indiana strawberries, cantaloupes, and peaches. By T. E. Hienton and K. I. Fawcett. Lafayette, Ind., 1939. 36 p. "Literature cited": p.36. Purdue university. Agricultural experiment station. Bulletin no. 439.

Pressure Measurements.

Wind pressure on structures. By George E. Howe. Civil engineering. v.10,no.3. March, 1940. p.149-152. Presents ideas and data from recent experiments on wind effects - particularly on open structural frames. Discussion of theoretical concepts is brief and author follows it with excellent summary of practical data for use in design. For those with special problems there is well-chosen bibliography of source material at end of article.

Pumps and Pumping.

New type irrigation pumping installation. By P. P. Pine. Rural electrification exchange. v.2,no.4.(new series). Fourth quarter, 1939. p.91. Essential requirements are as follows: 1. Foundation should be deep enough so that water will not erode sand away from underneath it. 2. Design of foundation should be such that it offers as little resistance to water currents as possible. 3. Column pipe should be very rigid for this will also catch considerable debris which has been carried downstream by swirling water.

Rainfall and Runoff.

Rainfall characteristics as related to soil erosion. By D. I. Blumenstock. Washington, D. C., 1939. 44p. U. S. Department of agriculture. Technical bulletin no. 698.

Reclamation.

Effect of Shasta Dam on the Sacramento River. By F.M.S. Johnson. Civil engineering. v.10,no.2. February, 1940. p.108-110. Reviews existing projects for both flood control and navigation on Sacramento, giving special attention in each case to Shasta Dam effects.

New acres for the west. By Herbert Currie. Country gentleman. v.109,no.11. November, 1939. p.7-8,45.

Refrigerator Lockers.

Cold-storage lockers for preserving farm dressed meat. By K. F. Warner. Washington, D. C., 1939. 19p. Mimeographed. U. S. Department of agriculture. Bureau of animal industry. A.H.D. no.16 revised.

Effect of on-the-farm freezing facilities on locker plants studied at U. of I. Air conditioning and refrigeration news. v.28,no.13 serial no.558. November 29, 1939. p.6.

Minnesota cold storage locker plants. By A.A. Dowell and others. University Farm, St. Paul, Minn., 1940. 39p. University of Minnesota. Agricultural experiment station. Bulletin 345.

Refrigerated food lockers in Michigan. By H. L. Seaton. In Michigan agricultural experiment station quarterly bulletin. v.22,no.3. February 1940. p.153-159. "References" p.159.

Research.

Research at the 1939 convention of the association of land-grant colleges and universities. Experiment station record. v.82,no.2. February, 1940. p.145-149.

Research needed on poultry and egg by-products. By Morley A. Jull. Everybodys poultry magazine. v.45,no.1. January, 1940. p.9,17-19. Millions of dollars probably could be added to the income of poultry raisers if new uses were found for its by-products--infertile incubator eggs, surplus egg whites, egg shells, offal from poultry dressing plants, poultry manure, feathers, etc.

The year in research. By F. E. Schmitt. Engineering news-record. v.124,no.7. February 15, 1940. p.243-246.

Rope.

Sheave design and wire rope economy. By F. L. Spangler. Engineering news-record. v.124,no.1. January 4, 1940. p.15-18. Wire rope life may be greatly lengthened if bending forces which cause fatigue cracks can be reduced. Proper sheave and drum design, as to diameter, material and groove size, and proper rope selection, as to flexibility, are important factors in reducing bending stresses. Principles which govern proper evaluation of these factors are discussed in article.

Sewage Irrigation.

Sewage treatment coupled with irrigation. By F. W. Veatch. Engineering news-record. v.124,no.1. January 4, 1940. p.24-26. Pueblo, Colo., sewage disposal plant, which in a semi-arid region, provides partial treatment and leaves final treatment to broad irrigation methods. Butane gas is used to supplement sludge gas as an auxiliary and standby fuel for engine operation.

Use of sewage effluents in irrigation. Public works. v.71,no.1. January, 1940. p.32,34-35. Resume of practice in the western areas of the United States, with special reference to permissibility, desirability and economic use.

Silt.

Studying sediment loads in natural streams. By Gilbert C. Dobson and Joe W. Johnson. Civil engineering. v.10, no.2. February, 1940. p.93-96. Quantitative measurements of bed load movement, in natural stream large enough to be representative of rivers in general, are being made almost daily at Enoree River Laboratory of Soil Conservation Service. Of special interest because they are first of their kind, these observations are but part of comprehensive research program designed to throw light on various problems of sediment transportation, particularly as related to soil conservation work. Describes laboratory, giving particular attention to unique control structure from which bed-load samples are drawn. Also describe technique of bed load observations, and summarize briefly other phases of research program.

Solar Heat.

Sun's heat for warming home in winter stored in tank. Popular mechanics magazine. v.73,no.2. February, 1940. p.186-187. Heat and energy from sun, trapped in roof and stored in basement tank for future use, will warm experimental house constructed at Massachusetts Institute of Technology for studying various uses of solar heat, including winter house heating, summer air conditioning and power generation. In recess on roof is shallow, box-like "heat trap," bottom of which consists of thin sheet of metal painted black to absorb utmost amount of solar energy. Under this is series of thin-walled metal tubes, which heat water circulating through them by their contact with sheet. Several panes of glass covering box let in sunlight, but prevent heat from escaping, while mineral wool under tubes keeps heat from slipping out in that direction. Heated water passes through insulated pipes to large storage tank so well insulated that it will keep water hot from few weeks to half year, depending upon tank's size. To use this heat for warming home, a system of forced circulation passes air through ducts that have one wall on hot side of tank. Small sunlight collector on roof can be used for storing heat all summer in tank large enough to hold entire winter's supply of heat; or collector large enough to heat house directly might be used.

Spillways.

Model study of Green Mountain Dam spillway. By J. H. Douma. Civil engineering. v.10,no.3. March, 1940. p.153-156. Green Mountain Dam, now under construction, is unit of Colorado-Big Thompson Project, Colo. Design of its spillway presented number of interesting hydraulic problems that were solved largely by model study reported here. Among those discussed in particular detail are minimum permissible curvature of inlet transition, discharge characteristics of crest, design of chute, and feasibility of a stilling basin to prevent scour below dam.

Standards.

1939 Book of A.S.T.M. Standards, including tentative standards. Part II Nonmetallic materials - Constructional. Philadelphia, American society for testing materials, c1939. 1217p.

1939 Book of A.S.T.M. Standards, including tentative standards. Part III Nonmetallic materials - General. Philadelphia, American society for testing materials, c1939. 1175p.

Storage of Farm Produce.

Home storage of frozen foods. By Harry L. Garver. Rural Electrification exchange. v.2, no.4.(new series). Fourth quarter, 1939. p.92-93. Fig.1--Floor plan of combination refrigerator showing location of studding. Fig. 3--Details of wall construction showing the location of insulation.

Temperatures.

Poultry house temperatures. By H. E. Besley. Farmers digest. v.3,no.7. November, 1939. p.29-32.

Tires.

100,000-mile tires. Popular mechanics magazine. v.73,no.3. March, 1940. p.334-335,130A-131A.

Pneumatic tyre. By J. A. Williamson. Agricultural gazette of New South Wales. v.50,part 12. December 1, 1939. p.643-646. In series of tests at Leeton Rice Research Station, Mr. J. A. Williamson has shown that many advantages are to be obtained by fitting pneumatic tyres to farm and orchard lorries, rice headers and other cultivation implements. Reductions in drawbar pull of approximately 50 per cent were recorded in dynamometer tests, in addition to increased speed of work, earlier working of wet land, less damage to soft land, and many other benefits of particular value to the irrigation farmer or orchardist. These advantages, however, were limited to machines and lorries hauled by horses or tractors. While pneumatic-tyred tractor proved efficient under good farming conditions, it was not as satisfactory as steel-wheeled or the crawler tractor under wet sticky soil conditions.

Then came rubber. By Neil M. Clark. County gentleman. v.109, no.11. November, 1939. p.14-15,70-71.

Tractors.

Care of the tractor. Michigan farmer. v.193,no.2. January 20, 1940. p.27,37.

How Pennsylvania pioneered in U. S. tractor farming. By F. Hal Higgins. Pennsylvania farmer. v.122,no.1. January 13, 1940 p.7,30.

Nebraska tractor tests, 1920-1939. Lincoln, Neb., 1940. 48p. University of Nebraska. Agricultural experiment station. Bulletin 325.

New automotive type tractors expand farm motor fuel market. National petroleum news. v.32,no.4. January 24, 1940. p.35-37.

Tractor drawbar capacity. By J. B. Torrance. Northwest Farm Equipment Journal. v.53, no.12. December, 1939. p.48.

Tractor repair and maintenance. By R. I. Shawl. Farm implement news. v.61, no.1. January 11, 1940. p.25-26,28,33-34. Discussion of general principles for non-experts with information applicable to tractors with which a dealer is unfamiliar and for which he has no service manual.

Wood gas tractor development. Implement and machinery review. v.65,no.777. January 1, 1940. p.855. Details of an investigation to help the small power user.

Ventilation.

Interlocking steel shingle ventilates roof to avoid rust. Popular mechanics magazine. v.73,no.2. February, 1940. p.225. Hexagonal steel shingles with watertight interlocking connections that permit air circulation underneath have just been introduced. Built so simply that experienced roofer is not required for installing them, these shingles are ultra-rigid and durable. Ventilation feature eliminates "sweating" and resulting rusting. If shingle is damaged it can be replaced by prying loose interlocking connections, and if building were wrecked entire steel-shingled roof could be removed and used again.

Walks.

Steps and paving. House and garden. Section II. Gardener's yearbook. January, 1940. p.20-21. Purposes and styles. Construction. Edgings. Paved terraces. Plants for cracks.

Walls.

Effect of heating and cooling on the permeability of masonry walls. By C. C. Fishburn and P. H. Petersen. Washington, D. C., 1940. 6p. U. S. National bureau of standards. Building materials and standards. Report BMS41.

Structural properties of wood-frame wall, partition, floor, and roof constructions with "Red strip" lath sponsored by the Weston paper manufacturing co. By H. L. Whittemore and A. H. Stang. Washington, D. C., 1940. 26p. U. S. National bureau of standards. Building materials and structures. Report BMS36.

Water Heaters.

Chicken water trough heater. By Chas. Wildebour and Glen Cushing. Rural electrification exchange. v.2,no.4.(new series). Fourth quarter, 1939. p.85. Reasons for this recommendation: 1. It is easy to construct. 2. Materials are easy to obtain. 3. Initial cost is low. 4. Radiation heat losses are small. 5. It conforms to recommendations of State Agricultural College. 6. Wet litter is prevented. 7. Standard poultry water heater is installed which is made by reliable manufacturer and available at most dealers. 8. Float valve is so placed that it will not freeze.

Water Supply.

Overseas engineering practice in relation to water supply activities. By W. A. Robertson. Melbourne, Australia, T. Rider, Govt. print., 1939. 170p.

Problems of Minnesota's water resources. Prepared by the Water resources committee. St. Paul, Minn., Minnesota resources commission, 1940. 8p. Processed.

Water Supply, Rural

Easy to turn the faucet. Wallaces' farmer and Iowa homestead. v.64,no.26. December 30, 1939. p.799.

Farm home sanitation. By E. R. Daniel. Stillwater, Okla., 1939. Oklahoma agricultural and mechanical college. Extension service. Circular 289. Reprint, 1939.

Weeds.

Chemical control of water weeds. Engineering news-record. v.124,no.1. January 4, 1940. p.34.

Weeds. (Cont'd).

Tillage equipment for weed control. By A. J. Schwantes. St. Paul, Minn., 1940. 1p. University of Minnesota. Agricultural extension division. Agricultural engineering news letter. no. 95.

Wheels.

Transport wheels for agricultural machines. By Eugene G. McKibben and J. Brownlee Davidson. Agricultural engineering. v.20, no.12. December, 1939. p.469-473. II. Rolling resistance of individual wheels.

Wood.

Exothermal decomposition temperature of wood. By Kenneth A. Kobe and Fred L. Goin. Industrial and engineering chemistry. Industrial ed. v.31,no.9. September, 1939. p.1171-1172. Exothermal reactions in thermal decomposition of wood are distributed over considerable range of temperature and depend upon rate of heating. Apparatus and procedure have been developed which give reproducible results and allow study of effect of various materials on exothermal decomposition temperature. Moisture in wood has no effect on exothermal decomposition temperature. Gasoline, kerosene, and light oil lower exothermal decomposition temperature, heavy oil causes no change, and creosote increases it.

Timber research and timber structures. By Ira D. S. Kelly. Civil engineering. v.9,no.12. December, 1939. p.727-730. Presents review of recent developments that are extending structural applications of timber to new and ever wider fields. Article deals mainly with examples of timber-connector construction, but contains also valuable and selective list of publications on phases of the general subject of interest to engineers, designers, fabrication, and specification writers.

Unidirectional drying of wood. By Ernest Bateman, John P. Hohf, and Alfred J. Stamm. Industrial and engineering chemistry. Industrial ed. v.31,no.9. September, 1939. p.1150-1154. Measurements were made of rate of drying from single face of small cylinders of Sitka spruce at different temperatures and under different relative humidity and atmospheric pressure conditions. Moisture gradients were determined on specimens prior to complete removal of free water. Drying in all cases gave weight losses that varied directly with square root of time. Values for mean effective diffusion per unit moisture gradient were calculated from rate of drying and moisture gradients up to fiber saturation point. Values increase slightly with increase in relative humidity effective in drying, and increase to greater extent with increase in drying temperature, decrease in atmospheric pressure, and decrease in specific gravity of wood.